

What is claimed is:

1. An electrolytic capacitor with a capacitor device, comprising:

a separator, coated with an electroconductive polymer that is formed through chemical oxidation polymerization of a polymerizing monomer in a solution containing at least a non-transition metal-based oxidizing agent and an organic acid compound;

an anode foil, having a dielectric oxide film; and

an cathode foil, opposed to the anode foil;

wherein the anode foil and the cathode foil are coiled up via the separator sandwiched between the anode foil and the cathode foil.

2. The electrolytic capacitor as claimed in claim 1, wherein the separator is constituted by a nonwoven fabric that contains at least one or more selected from a group of polyethylene terephthalate, polybutylene terephthalate, polyphenylene sulfide, nylon, aromatic polyamide, polyimide, polyamidaimide, polyether imide, rayon and glassy material.

3. The electrolytic capacitor according to claim 2, wherein the nonwoven fabric is prepared in a spun-bonding process or a wet-papermaking process.

4. The electrolytic capacitor according to claim 2, wherein the thickness of the separator substrate is at most 100 μm , and the weight thereof is from 10 to 60 g/m^2 .

5. The electrolytic capacitor according to claim 1, wherein the capacitor device is infiltrated with a driving electrolytic solution.